INDEX

Page

Abortion, in Eggplant, and Intersexual Flowers, Characteristics Associated with. Ora Smith 83–93
Actinea odorata—
Bitter Rubber Weed, Poisonous Effects on Sheep, Preliminary Report. A. B. Clawson 693–701
description and distribution 694–696
Aegilops—
emmer hybrids, experiments 662–679
ovata—
and *Triticum dicoccum*, "Constant" Hybrid between, Inheritance. J. W. Taylor and C. E. Leighty 661–679
description 662
× *Triticum dicoccum*, characters, description 664–673, 674–675, 678–679
Ageratum, development under Vitaglass, experiments 152
Air velocity, control on growing plants, apparatus for 1081–1082
Alfalfa—
and Sweetclover, Stand and Yield, Correlation between. C. J. Willard 461–464
freezing artificially, tests and results 934–955
injury by cold, relation to subsequent new growth 950–951, 952
mesophyll, injury by *Empoasca* spp 268, 274
moisture content, relation to growth 933–934, 952
plant characters, relation to survival after freezing 942–945, 953
plants, 2-Year-Old, Hardiness Studies. George L. Peltier and H. M. Tysdal 931–955
roots, cracking due to freezing, study 946–949
yield and stand, correlation 461–462, 464
Alkali soil, effect on cotton fiber maturity 737–738, 742
ALLARD, H. A., and GARNER, W. W.: Duration of the Flowerless Condition of Some Plants in Response to Unfavorable Lengths of Day 439–443
Ambrosia fungus, propagation by beetles, and description 848, 849
Amides, acid, hydrolysis, humin nitrogen formed, chemical nature 818–821, 823
Ammonia, accumulation in soils, studies 907–908, 913–914, 916
Ammonium chloride, effect on toxicity of sodium chlorate to Nitella, study 801–802, 808
ANDERSON, H. W., and THORNBERRY, H. H.: A Bacterial Disease of Barberry Caused by *Phytomonas berberidis*, N. Sp. 29–36
Anthelmintic, new, use for removal of strongyles from horses 287–301
Anthelmintics—
effect on pregnant ewes 1065–1066, 1068
Use in Control of Gastrointestinal Parasites of Sheep by Weekly Treatments. Willard H. Wright and John Bozicevich 1053–1069
Antiscorbutic Vitamin in—
Home-Canned Carrots. Adelaide Spohn and Amy Hunter 1101–1108
Juice of Home-Canned Tomatoes. Adelaide Spohn 1109–1113
Apanteles lacteicolor—
parasite of brown-tail moth 38, 39, 52
parasitism, experiments 38, 39–40, 50–53, 54–55
Apparatus for—
determining breaking strength of straw, description and experiments 74–82
Growing Plants under Controlled Environmental Conditions. Robert A. Steinberg 1071–1084

Page

Apple—
graft unions, inoculation with strains of *Bacterium tumefaciens*, study 985–1002
grafts—
callus formation, effect on susceptibility to crown-gall organism 986–991, 998–1002
disinfection and washing for removal of bacteria, experiments 992–993
inoculation with strains of *Bacterium tumefaciens*, results 990–1002
leaves, penetration by petroleum oils, study 470–472, 474
seedling understocks—
immersion in water suspension of crown gall organism 993–994
washing and disinfection, effect on susceptibility to crown gall 992–994
Trees—
Cytospora canker. D. F. Fisher and E. L. Reeves 431–438
disinfection for Cytospora canker, experiments 436
twigs, penetration by petroleum oils, study 472–474
wood, inoculation with Cytospora spores 436–437
Artichoke, Jerusalem, storage rots. H. W. Johnson 337–352
ARTSCHWAGER ERNST, and STARRETT, RUTH COLVIN: Suberization and Wound-Periderm Formation in Sweetpotato and Gladiolus as Affected by Temperature and Relative Humidity 353–364
Ascarids, in horses, removal by means of n-butylidene chloride, test 290, 298
Ash content of wheat plants, relation to lodging, study 619–625
Atractina sp., association with Dendroctonus bark beetle 862
Autohygrometer, use in insectaries for humidity determinations 551, 556, 557
Avena—
byzantina, spikelet characters 369–370
fatua, description 368
sativa, spikelet and floret separation 369
sterilis—
ludoriciana, description 368–369
macrocarpa, description 368

Bacillus—
aroideae, development on Jerusalem artichoke 345–347, 348, 351
carotovorus, development on Jerusalem artichoke 345–346, 347, 348, 351
Bacteria—
in Soil, Study of Activities by the Soil Versus the Solution Method. H. C. Pulley and J. E. Greaves 905–917
legume, relative numbers in soil, experiments 261–266
Bacterium tumefaciens, infestation of apple graft, study 986–1002
Barberries, inoculation with *Phytomonas berberidis*, results 32–34
Barberry—
Bacterial Disease of, *Phytomonas berberidis*, N.Sp., as Cause. H. H. Thornberry and H. W. Anderson 29–36
leaf spot—
cause and description 29–36
See also *Phytomonas berberidis*.
Bark Beetles, Infestation of Pines, Two Blue-Staining Fungi Associated with. Caroline T. Rumbold 847–873

Page

Bark, yellow pine, infested by beetle, temperature studies ... 304–309, 310–314, 315–316, 318–321

Barley—
and Wheat, Floral Infection by Loose Smut, Influence of Humidity. V. F. Tapke ... 503–516
resistance to loose smut, relation to humidity, experiments ... 507–515

BARRETT, JAMES T., and SMITH, CLAYTON O.: Crown Rot of Juglans in California ... 885–903

BAYLES, B. B.; COFFMAN, F. A.; STANTON, T. R.; WIEBE, G. A.; SMITH, R. W.; and TAPKE, V. F.: Inheritance of Resistance in Oats to *Ustilago levis* ... 1085–1099

BEAUMONT, A. B.; LARSINOS, G. J.; PIEKENBROCK, P.; and NELSON, P. R.: The Assimilation of Nitrogen by Tobacco ... 559–566

Bees. See Honeybee.

Beetle, western pine. *See* Pine, western, beetle.

Beets. *See* Mangels.

Begonia, development under Vitaglass, experiments ... 153, 158

BERTHOLF, LLOYD M.: The Distribution of Stimulative Efficiency in the Ultra-Violet Spectrum for the Honeybee ... 703–713

Bindweed Roots, Catalase Activity, Effect of Chlorates upon. J. R. Neller ... 183–189

Bitter Rubber Weed (*Actinea odorata*), Poisonous Effects on Sheep, Preliminary Report. A. B. Clawson ... 693–701

Blue-Stain—
Fungi, Association with Bark-Beetle Infestation of Pines. Caroline T. Rumbold ... 847–873
occurrence and description ... 861–862, 869–870

Boll weevil, cotton, control by earliness of crop ... 637

Botrytis cinerea—
cause of gray mold of tobacco ... 165, 168–171, 174
development on Jerusalem artichoke ... 343–344, 351

Bots, in horses, removal by means of n-butylidene chloride, experiments ... 292, 294, 295, 298

Bouteloua spp., value for grazing in the Southwest ... 1033, 1045, 1046–1048, 1050

BOZICEVICH, JOHN—
and WRIGHT, WILLARD H.: Control of Gastrointestinal Parasites of Sheep by Weekly Treatments with Various Anthelmintics ... 1053–1069

WRIGHT, WILLARD H.; RAFFENSPERGER, H. B.; UNDERWOOD, PAUL C.; and SCHAFFER, JACOB M.: N-Butylidene Chloride, a New Drug for the Treatment of Equine Strongylidosis ... 287–302

Bracken, density on grazed and ungrazed land ... 414

BRAMAN, WINFRED W.; FORBES, E. B.; KRISS, MAX; SWIFT, R. W.; MILLER, R. C.; FRENCH, R. B.; LETONOFF, T. V.; and SHARPLESS, G. R.—
The Fasting Metabolism of Cattle as a Base Value of Heat Production in the Determination of the Net Energy of Feeding Stuffs ... 1003–1014
The Metabolizable Energy and Net Energy Values of Corn Meal When Fed Exclusively and in Combination with Alfalfa Hay ... 1015–1026

Breeding, wheat, back crossing in, experiments ... 476–498

BROWN, B. E.; MARTIN, WM. H.; and SPRAGUE, H. B.: The Influence of Nitrogen, Phosphoric Acid, and Potash on the Number, Shape, and Weight of Potato Tubers ... 231–260

Brown-Tail Moth—
and Satin Moth, Parasite of, *Eupleromalus nidulans*. A. B. Proper ... 37–56
Parasite, Primary and Secondary, *Monodontomerus aereus* Walker. C. F. W. Muesebeck ... 445–460
parasitism, experiments ... 37–39, 52–53, 54–55

BULL, HENRY: The Use of Polymorphic Curves in Determining Site Quality in Young Red Pine Plantations ... 1–28

Page

Bunostomum trigonocephalum, in sheep, control by weekly doses of anthelmintics ... 1056, 1058, 1059, 1066

Bunt, physiologic forms, effects on stunting of wheat ... 467–468

BURRELL, R. W.: *Dexia ventralis* Aldrich, an Imported Parasite of the Japanese Beetle ... 323–336

BUSHNELL, JOHN, and WELTON, F. A.: Some Effects of Straw Mulch on Yield of Potatoes ... 837–845

Cabbage, development under Vitaglass, experiments ... 147–148, 158

Cages, Insect-Rearing, Common Types, a Study of Temperature and Humidity Conditions in. Roger C. Smith ... 547–557

Calcium—
chloride, effect on toxicity of sodium chlorate to Nitella ... 803, 808
content of *Nitella clavata* sap, determination ... 797

California, Crown Rot of Juglans. Clayton O. Smith and James T. Barrett ... 885–903

CAMPBELL, R. S.: Plant Succession and Grazing Capacity on Clay Soils in Southern New Mexico ... 1027–1051

Canker, Cytospora, of Apple Trees. D. F. Fisher and E. L. Reeves ... 431–438

Canning—
carrots, effect on antiscorbutic vitamin, study ... 1101–1108
home, of—
carrots, effect on vitamin C content ... 1101–1108
tomato juice, effect on vitamin C content ... 1109–1113
tomatoes, effect on antiscorbutic vitamin, study ... 1109–1113

Cantaloupe, host of tobacco ring spot, experiments ... 194, 206

Carbon—
dioxide, production in soil, green-manuring experiments ... 725–729, 731
tetrachloride—
efficacy as anthelmintic for dogs and horses ... 287–289
efficacy in removal of parasites from sheep, experiments ... 1053–1068
toxicity to sheep, study ... 1060, 1061–1062, 1063

Carrots—
Home-Canned, Antiscorubutic Vitamin in. Adelaide Spohn and Amy Hunter ... 1101–1108
processing, effects on vitamin C potency ... 1101–1108
raw, value in protecting guinea pigs from scurvy ... 1103–1107

Cassia marilandica, flowerless condition, day-length experiments ... 442, 443

Catalase—
Activity of Roots of Bindweed, Effect of Chlorates upon. J. R. Neller ... 183–189
presence in *Gibberella saubinetii*, tests ... 226, 229

Caterpillar, Seed, *Grapholitha conversana* Wlsm., on a Native Clover in the North Pacific Region. L. P. Rockwood and Sarah K. Zimmerman ... 57–65

Cattle—
digestion experiments with alfalfa hay and corn meal ... 1015–1021
energy cost of standing and lying, study ... 1005, 1008
fasting—
heat emission and production ... 1010, 1022–1024
Metabolism as a Base Value of Heat Production in Determination of Net Energy of Feeding Stuffs. E. B. Forbes, Winfred W. Braman, Max Kriss, R. W. Swift, R. C. Miller, R. B. French, T. V. Letonoff, and G. R. Sharpless ... 1003–1014
Heat Production, Fasting Metabolism as a Base Value in Determination of Net Energy of Feeding Stuffs. E. B. Forbes, Winfred W. Braman, Max Kriss, R. W. Swift, R. C. Miller, R. B. French, T. V. Letonoff, and G. R. Sharpless ... 1003–1014
standing and lying, heat production, study ... 1005, 1008

Cellulose, content of wheat plant, relation to lodging ... 619–623

Page

Cephus pygmaeus (L.), European Wheat Sawfly, *Heterospilus cephi* Rohwer, a Parasite of. C. C. Hill and H. D. Smith. 597–609
Ceratostomella—
ips, n. sp.—
damage to pines 864–866, 869–870, 871–872
description in culture 863, 866–868
technical description 870
pini—
damage to pines 851–853, 870–872
description in culture 853–862
spp., association with bark-beetle damage, history 847–850
Chickens. *See* Hens.
Chlorates, Effect upon the Catalase Activity of the Roots of Bindweed. J. R. Neller 183–189
Chloride—
content of *Nitella clavata* sap, determination 796
outward diffusion, criterion of injury to Nitella cells 800
Chlorides, modification of toxic action on Nitella 801–803, 808, 809
Chrysanthemum, development under Vitaglass, experiments 154–156, 159
Cineraria, development under Vitaglass, experiments 152–153
Citrus—
leaves—
position, relation to size and stomatal density 217–218
size, relation to stomatal density 210–215
Stomata, Density. H. S. Reed and E. Hirano 209–222
limonia, leaf studies 210–219, 221–222
sinensis, leaf studies 209–222
Clawson, A. B.: A Preliminary Report on the Poisonous Effects of Bitter Rubber Weed (*Actinea odorata*) on Sheep 693–701
Clay—
lake-bed, plant succession on, southern New Mexico 1048–1049, 1051
Soils, Plant Succession and Grazing Capacity in Southern New Mexico. R. S. Campbell 1027–1051
Climate, effect on gray mold of tobacco 171–173, 174
Cockerels, molting mechanism, effect of thallium salts 68–72
Cod-Liver Oil—
and Ultra-Violet Irradiation, as Influenced by Oyster Shell, in the Diet of Confined Laying Hens, Effects. Walter A. Hendricks, Alfred R. Lee, and Albert B. Godfrey 517–535
feeding to laying hens, effects 517–533
Coffman, F. A.; Stanton, T. R.; Bayles, B. B.; Wiebe, G. A.; Smith, R. W.; and Tapke, V. F.: Inheritance of Resistance in Oats to *Ustilago levis* 1085–1099
Cold—
resistance, alfalfa plants, studies in field and greenhouse 931–955
storage—
Jerusalem artichokes, effect on development of rots 337–351
room, for crop plants, construction and equipment 181–182
Coleus, development under Vitaglass, experiments 153–154, 158–159
Color, corn sap, relation to soil deficiencies, study 100–101, 117, 118
Columbia National Forest—
understory, composition 390
use by grazing sheep, effects 407–415
Conifer seedlings, cut-over land, grazing effects 415–416
Control Equipment for the Study of Hardiness in Crop Plants. George L. Peltier 177–182
Convolvulus arvensis, roots, catalase activity, effect of chlorates upon 183–189
Cooperia curticei, in sheep, control by weekly treatments of anthelmintics 1056, 1060, 1067

Page

Copper sulphate—
efficacy in removal of parasites from sheep, study 1053–1068
toxicity to sheep, experiments 1060–1061, 1062, 1064–1065, 1067
Corn—
breeding for resistance to rust, experiments 419–430
inheritance of resistance to rust, study 420–430
Meal, Energy Values, Metabolizable and Net, When Fed Exclusively and in Combination with Alfalfa Hay. E. B Forbes, Winfred W. Braman, Max Kriss, R. W. Swift, R. C. Miller, R. B. French, T. V. Letonoff, and G. R. Sharpless 1015–1026
Penicillium Injury, Further Studies. Helen Johann, James R. Holbert, and James G. Dickson 757–790
plant—
age, effect on phosphorus content of sap 103–104
external characteristics, relation to soil deficiencies, study 109–116, 117–118
nitrogen needs, indicators 110–111
potassium needs, indicators 111–113, 118
plants—
absorption of nutrients from soils as indicated by sap 105–107
Expressed Sap as an Indicator of Nutrient Needs. N. A. Pettinger 95–119
ration, value in diet of growing pigs 744–748
sap—
critical nutrient concentrations 104–105
hydrogen-ion concentration, tests, results 108–109
phosphorus content, relation to phosphatic fertilization, study 97–98, 102, 103–104, 105–108, 117
yield, relation to size of stalks and fertility of soil 98–100, 117
seedlings—
infected with *Penicillium oxalicum*, histological studies 773–784
injury by *Penicillium oxalicum*, symptoms 759, 760–761
inoculation with *Gibberella saubinetii*, method and results 570–594
Parasitism of *Gibberella saubinetii* on. Norma L. Pearson 569–596
Cornstalks, lodging, relation to potassium in sap 114–116, 118
Cotton—
aerial growth, limitation of, results 875–882
boll—
development rate, experiments 653–656
fluffiness, relation to fiber maturity 736–737
weevil, control by earliness of crop 637
Earliness, Factors Concerning. C. A. Ludwig 637–659
Fiber—
Diameter Measurements, Sample-Size Determination. O. A. Pope 957–984
Maturity, Methods of Estimating. R. S. Hawkins 733–748
maturity, varietal differences 741, 742
fibers—
diameter measurement, equipment and process 960–962
microscopical examination, method 733–736
fineness, measurement methods, description and disadvantages 958–959
lint, classification 737
maturation periods, boll and square, study 639–643, 656
picking time, effect on fiber maturity 741
Plant—
Fruitfulness and Character of Growth, Relation to Root Development. Frank M. Eaton 875–883
Root Development as Related to Character of Growth and Fruitfulness. Frank M. Eaton 875–883

Page

Cotton—Continued.
plants—
cultivation, duration, effect on square and boll periods ... 647–648, 657
inoculation with *Phymatotrichum omnivorum*, experiments ... 682–691
spacing, effect on square and boll periods ... 645–647, 657
stripping, effect on square and boll periods ... 648–653, 657
root development—
relation to fruitfulness ... 875–882
stimulation of, importance ... 881–882
root-rot fungus—
conidial stage, viability tests ... 499–500, 501–502
in soil, viability tests ... 501–502
Phymatotrichum omnivorum, Infection Experiments. David C. Neal and George T. Ratliffe ... 681–691
Strand Hyphae of, Viability. David C. Neal and Lawrence G. McLean ... 499–502
seed, maturity, relation to fiber maturity ... 738–741, 742
strains, diameter measurements, comparison ... 981–982, 984
Cottonseed Meal—
and Linseed Meal, Proteins of, Both Alone and in Combination with the Proteins of Corn, Nutritive Value for Growing Swine. H. H. Mitchell and T. S. Hamilton ... 743–748
protein, digestibility and biological value in diet of pigs ... 744–748
Cow, respiratory quotient, determination ... 1006
Cows—
dairy—
genital history, experiments ... 628–632
Ova from Fallopian Tubes, Study with a Genital History. Fred W. Miller, W. W. Swett, Carl G. Hartman, and Warren H. Lewis ... 627–636
ova, fertilized and unfertilized, description ... 632–635
Craterostomum spp., in horses, removal by means of n-butylidene chloride ... 291–292, 299
Crop Plants, Hardiness Study, Control Equipment for. George L. Peltier ... 177–182
Crossbreeding—
Aegilops ovata and *Triticum dicoccum*, study ... 664, 665, 667, 677–678
corn, for resistance to rust, experiments ... 420–430
oats, for—
inheritance of type of floret separation ... 365–386
resistance to *Ustilago levis*, study ... 1086, 1098
wheat, inheritance studies ... 476–498
Crosses—
Back, in Wheat, a Study of Certain Characters in. Victor H. Florell ... 475–498
Interspecific, in Oats, Inheritance of Type of Floret Separation and Other Characters. Victor H. Florell ... 365–386
Crown—
Gall, Woolly-Knot Type, Pathogenesis. E. A. Siegler and R. B. Piper ... 985–1002
Rot of Juglans—
in California. Clayton O. Smith and James T. Barrett ... 885–903
symptoms ... 886–887
Cyclamen, development under Vitaglass, experiments ... 152
Cylicostomes, in horses, removal by means of n-butylidene chloride ... 290–297, 299, 301
Cytospora—
canker—
control on apple trees, experiments ... 435–437
of Apple Trees. D. F. Fisher and E. L. Reeves ... 431–438
infestation of apple orchards ... 431–434

DAVIDSON, JEHIEL; PHILLIPS, MAX; and WEIHE, H. D.: Studies of Lignin in Wheat Straw with Reference to Lodging ... 619–626
Day lengths, effect on flowering of plants, study ... 430–443
Daylight. *See* Light; Photoperiodism; Sunlight.
Decomposition, Green Manures Grown on a Soil and Turned under, Comparison with Decomposition of Green Manures Added to a Fallow Soil. Nathan R. Smith and Harry Humfeldt ... 715–730

Page

Defloration, cotton, results ... 875–882
Dendroctonus bark beetles, spread of blue-stain fungus ... 847–850, 851–853, 870–872
Dew-point apparatus, use in insectaries ... 849, 850, 857
Deria centralis—
adaptability to American conditions ... 334–336
Aldrich, an Imported Parasite of the Japanese Beetle. R. W. Burrell ... 323–336
colonization ... 325–326, 336
life history and habits, observations ... 330–334, 336
mating and propagation, experiments ... 326–330, 336
native range and hosts ... 323, 336
shipment and handling methods ... 323–325, 336
Diamino acids, in Alaska pea, nitrogen determination ... 817–818
DICKSON, JAMES G.; JOHANN, HELEN; and HOLBERT, JAMES R.: Further Studies on Penicillium Injury to Corn ... 787–790
DIEHM, MAURICE M., and SPITZER, GEORGE: Preliminary Studies of the Enzymes of *Gibberella saubinetii* ... 223–229
Diet, Laying Hens—
Confined, Effects of Cod-Liver Oil and Ultra-Violet Irradiation, as Influenced by Oyster Shell. Walter A. Hendricks, Alfred R. Lee, and Albert B. Godfrey ... 517–535
effect on—
egg production ... 521–523, 532
egg weights ... 524–526, 532
fertility and hatchability of eggs ... 528–530, 532
thickness of egg shells ... 526–528, 532
Douglas fir. *See* Fir, Douglas.
Drug, New, N-Butylidene Chloride, for the Treatment of Equine Strongylidosis. Willard H. Wright, H. B. Raffensperger, John Bozicevich, Paul C. Underwood, and Jacob M. Schaffer ... 287–302
Drymaria holosteoides, occurrence in Southwest and viability of seeds ... 1036–1037
D'URBAL, R. P., and OFFORD, H. R.: Toxic Action of Aqueous Sodium Chlorate on Nitella ... 791–810
DUSTMAN, R. B.; MORROW, K. S.; and HENDERSON, H. O.: Changes in the Chemical Composition of Mangels and Rutabagas during Storage ... 919–930

EATON, FRANK M.: Root Development as Related to Character of Growth and Fruitfulness of the Cotton Plant ... 875–883
Eberthella typhi, resistance to phenol mixtures, tests ... 611–617
Eggplant—
Abortion and Intersexual Flowers, Characteristics Associated with. Ora Smith ... 83–93
anthesis and blossom drop, experiments ... 84–86, 92–93
Black Beauty variety, use in experiments ... 83–93
flowers—
comparisons ... 88–93
Intersexual, and Abortion, Characteristics Associated with. Ora Smith ... 83–93
style length, relation to degeneration of ovules ... 90–91, 92–93
Eggs, characteristics, relation to diet of hens ... 521–533
Emmer—
Aegilops hybrids, inbreeding experiments ... 662–679
Black Winter, introduction and description ... 662
Empoasca—
fabae, phloem feeders ... 274–283, 284
Genus, Some Leaf Hoppers of, Feeding Habits. Floyd F. Smith and F. W. Poos ... 267–285
sp.—
injury to host plant, discussion ... 283–284
mesophyll feeders ... 268–274, 284
Energy—
expenditure, cattle, standing and lying, determination ... 1007, 1008
Net, of Feeding Stuffs, Determination by Study of Fasting Metabolism of Cattle as a Base Value of Heat Production. E. B. Forbes, Winfred W. Braman, Max Kriss, R. W. Swift, R. C. Miller, R. B. French, T. V. Letonoff, and G. R. Sharpless ... 1003–1014

Energy—Continued. Page
values—
alfalfa hay with and without corn meal, study 1015–1026
Metabolizable and Net, of Corn Meal When Fed Exclusively and in Combination with Alfalfa Hay. E. B. Forbes, Winfred W. Braman, Max Kriss, R. W. Swift, R. C. Miller, R. B. French, T. V. Letonoff, and G. R. Sharpless 1015–1026
Environment, plants, apparatus for control 1071–1084
Enzymes of *Gibberella saubinetii*, Preliminary Studies. George Spitzer and Maurice M. Diehm 223–229
Equine Strongylidosis, Treatment by N-Butylidene Chloride, a New Drug. Willard H. Wright, H. B. Raffensperger, John Bozicevich, Paul C. Underwood, and Jacob M. Schaffer 287–302
Equipment, Control, for the Study of Hardiness in Crop Plants. George L. Peltier 177–182
Ethyl alcohol, effect upon the germicidal efficiency of phenols 611–612, 615–617
Eupteromalus nidulans—
a Parasite of the Brown-Tail and Satin Moths. A. B. Proper 37–56
biology and habits 39–46, 54–55
host relations 50–56
hyperparasitism 38
importation and colonization 38–39
stages of, description 46–50, 55–56
Ewes, pregnant, treatment with anthelmintics, results 1054, 1065–1066, 1068

Fat, in Milk, Percentage, as a Basis for Estimating Composition. Orme J. Kahlenberg and Le Roy Voris 749–755
Feeding Stuffs, Net Energy, Determination by Study of Fasting Metabolism of Cattle as a Base Value of Heat Production. E. B. Forbes, Winfred W. Braman, Max Kriss, R. W. Swift, R. C. Miller, R. B. French, T. V. Letonoff, and G. R. Sharpless 1003–1014
Fermentation, honey—
characteristics and products 126–128
prevention, recommendations 130–131
yeasts produced, some characteristics 121–131
Fertility, Aegilops-emmer hybrids, experiments 676, 679
Fertilizers—
effectiveness as sources of nitrogen, phosphorus, and potassium 107–108
influence on potato tubers 231–260
relation to quantitative chemical composition of corn sap 101–104
Fiber Maturity, Cotton, Methods of Estimating. R. S. Hawkins 733–748
Fir, Douglas—
Cut-Over Land, Vegetative Changes and Grazing Use. Douglas C. Ingram 387–417
diameter growth, relation to thinning 542–546
height, relation to thinning 540–542, 546
Young, Thinning Experiments. W. H. Meyer 537–546
Fireweed, abundance on grazed and ungrazed land 413–144
Fisher, D. F., and Reeves, E. L.: A Cytospora Canker of Apple Trees 431–438
Florell, Victor H.—
A study of Certain Characters in Wheat Back Crosses 475–498
Inheritance of Type of Floret Separation and Other Characters in Interspecific Crosses in Oats 365–386
Floret Separation, Type, Inheritance, and Other Characters in Interspecific Crosses in Oats. Victor H. Florell 365–386
Flourensia cernua, protection to forage 1047–1048, 1050
Flowering, of plants, effects of day length on, study 439–443
Flowerless Condition, Plants, Duration in Response to Unfavorable Lengths of Day. W. W. Garner and H. A. Allard 439–443

Page
Flowers, Intersexual, in Eggplant, and Abortion, Characteristics Associated with. Ora Smith 83–94
Foliage, penetration by petroleum oils, experiments 469–474
Forbes, E. B.; Braman, Winfred W.; Kriss, Max; Swift, R. W.; Miller, R. C.; French, R. B.; Letonoff, T. V.; and Sharpless, G. R.—
The Fasting Metabolism of Cattle as a Base Value of Heat Production in the Determination of the Net Energy of Feeding Stuffs 1003–1014
The Metabolizable Energy and Net Energy Values of Corn Meal When Fed Exclusively and in Combination with Alfalfa Hay 1015–1026
Forest—
fires—
effect on vegetation in Douglas fir areas 402–404
effects on oleoresin yield of longleaf pine, study 827–836
on cut-over Douglas fir lands, reduction by grazing, study 387–417
vegetation, Douglas fir region, relation to repeated fires 402–404
Forests—
Douglas fir, understory, composition 388–391
vegetative changes after burning and logging 391–396
Fowls, Molting Mechanism of, Influence of Thallium Salts upon. Walter Landauer 67–72
Fred, E. B.; Marvin, G. E.; Peterson, W. H.; and Wilson, H. F.: Some of the Characteristics of Yeasts Found in Fermenting Honey 121–131
Freezing—
alfalfa, injurious results 946–949
artificial, of alfalfa, tests and results 934–955
room, for crop plants, construction and equipment 179–181
French, R. B.; Forbes, E. B.; Braman, Winfred W.; Kriss, Max; Swift, R. W.; Miller, R. C.; Letonoff, T. V.; and Sharpless, G. R.—
The Fasting Metabolism of Cattle as a Base Value of Heat Production in the Determination of the Net Energy of Feeding Stuffs 1003–1014
The Metabolizable Energy and Net Energy Values of Corn Meal When Fed Exclusively and in Combination with Alfalfa Hay 1015–1026
Fungi—
number in soil, green-manuring experiments 723–724, 731
Two Blue-Staining, Associated with Bark-Beetle Infestation of Pines. Caroline T. Rumbold 847–873
Fusarium sp., development on Jerusalem artichoke 342, 343, 345, 348, 349, 350, 351

Galls—
formation by inoculation of apple graft union, experiments 996–1002
on apple scions, seasonal development 955
Garner, W. W., and Allard, H. A.: Duration of the Flowerless Condition of Some Plants in Response to Unfavorable Lengths of Day 439–443
Gastrointestinal Parasites of Sheep, Control by Weekly Treatments with Various Anthelmintics. Willard H. Wright and John Bozicevich 1053–1069
Germicidal Efficiency of Mixtures of Phenols with Sodium Hydroxide, with Glycerin, and with Ethyl Alcohol. F. W. Tilley and J. M. Schaffer 611–617
Germination, Aegilops-emmer hybrids, experiments 673–676, 678
Gerry, Eloise: Oleoresin Production from Longleaf Pine Defoliated by Fire 827–836
Gibberella saubinetii—
action on corn seedling cells 582–587, 593–594
biochemical properties, studies 223–229

Gibberella saubinetii—Continued. Page
Enzymes of, Preliminary Studies. George Spitzer and Maurice M. Diehm 223–229
infection of corn seedling, wound responses 587–593, 594
Parasitism on Corn Seedlings. Norma L. Pearson 569–596
penetration of—
corn coleorhiza 580–582, 593
cortex of corn mesocotyl 571–580, 593
GINSBURG, JOSEPH M.: Penetration of Petroleum Oils into Plant Tissue 469–474
Gipsy Moth Parasite, Primary and Secondary, *Monodontomerus aereus* Walker. C. F. W. Muesebeck 445–460
Gladiolus—
and Sweetpotato, Suberization and Wound-Periderm Formation as Affected by Temperature and Relative Humidity. Ernst Artschwager and Ruth Colvin Starrett 353–364
corm—
structure 360
suberization, study 353–354, 360–363, 364
wound-cork development, study 353–354, 360, 363–364
Glass, screening, effect on plant development, study 134–161
Glucosidase, presence in *Gibberella saubinetii*, tests 225, 229
Glycerin, effect upon germicidal efficiency of phenols 611–612, 614, 616–617
GODFREY, ALBERT B.; HENDRICKS, WALTER A.; and LEE, ALFRED R.: Effects of Cod-Liver Oil and Ultra-Violet Irradiation as Influenced by Oyster Shell, in the Diet of Confined Laying Hens 517–535
Grain-stem sawfly, black, host of *Heterospilus cephi*, experiment 597
Graphelitha conversana—
natural enemies 64, 65
Wlsm.—
a Seed Caterpillar, on a Native Clover in the North Pacific Region. L. P. Rockwood and Sarah K. Zimmerman. 57–65
description 58–61
food plants 61–62
history and distribution 57–58
nature of injury and economic importance 62–63, 64–65
seasonal history 63–64
Gray Mold of Tobacco—
Frederick A. Wolf 165–175
appearance and pathogene 166–171
effect of climate on 171–173, 174
preventive measures 173–174
Grazing—
Capacity and Plant Succession on Clay Soils in Southern New Mexico. R. S. Campbell 1027–1051
effect on conifer seedlings, cut-over land 415–416
influence on plant cover, cut-over land 407–416, 417
Use, Douglas Fir Cut-Over Land, and Vegetative Changes. Douglas C. Ingram 387–417
utilization on cut-over Douglas-fir areas 407–411, 416
GREAVES, J. E., and PULLEY, H. C.: The Soil Versus the Solution Method as a Means of Studying Bacterial Activities in Soil 905–917
Green manures—
decomposition, microbiological effects 716–731
Grown on a Soil and Turned Under, Decomposition, Comparison with Decomposition of Green Manures Added to a Fallow Soil. Nathan R. Smith and Harry Humfeldt 715–731
Greenhouse—
cold-storage room for crop plants, construction and equipment 181–182
freezing room for crop plants, construction and equipment 179–181
hardening room for crop plants, construction and equipment 177–179
Greenhouses, lighting experiments with Vitaglass 134–161

Guinea pigs— Page
protection from scurvy by feeding raw carrots 1103–1107
scurvy, result of feeding—
home-canned carrots 1101–1108
home-canned tomato juice 1109–1113

Habronema spp., in horses, removal by means of n-butylidene chloride 296–297, 298–299
Haemonchus contortus in sheep, control by weekly doses of anthelmintics 1056, 1058, 1059, 1060, 1066
HAMILTON, T. S., and MITCHELL, H. H.: The Nutritive Value for Growing Swine of the Proteins of Linseed Meal and of Cottonseed Meal, Both Alone and in Combination with the Proteins of Corn 743–748
Hardiness—
Alfalfa Plants, 2-Year-Old, Studies. George L. Peltier and H. M. Tysdal 931–955
in Crop Plants, Study, Control Equipment for. George L. Peltier 177–182
HARTMAN, CARL H.; MILLER, FRED W.; SWETT, W. W.; and LEWIS, WARREN H.: A Study of Ova from the Fallopian Tubes of Dairy Cows, with a Genital History of the Cows 627–636
HAWKINS, R. S.: Methods of Estimating Cotton Fiber Maturity 733–748
Hay, alfalfa, energy values, with and without corn meal, study 1015–1026
Heat—
emission by cattle during fasting, measurement 1010, 1022
increment, cattle, meaning of term 1003
increments, fasting cattle, with net energy values, computation 1025–1026
production, cattle—
during fasting, measurement 1005, 1010–1012, 1014, 1022–1024
Fasting Metabolism as a Base Value of in Determination of Net Energy of Feeding Stuffs. E. B. Forbes, Winfred W. Braman, Max Kriss, R. W. Swift, R. C. Miller, R. B. French, T. V. Letonoff, and G. R. Sharpless. 1003–1014
Helianthus tuberosus, storage rots of 337–352
HENDERSON, H. O.; MORROW, K. S.; and DUSTMAN, R. B.: Changes in the Chemical Composition of Mangels and Rutabagas during Storage 919–930
HENDERSON, R. G., and WINGARD, S. A.: Further Studies on Tobacco Ring Spot in Virginia 191–207
HENDRICKS, WALTER A.; LEE, ALFRED R.; and GODFREY, ALBERT B.: Effects of Cod-Liver Oil and Ultra-Violet Irradiation, as Influenced by Oyster Shell, in the Diet of Confined Laying Hens 517–535
Hens—
Confined Laying, Effects of Cod-Liver Oil and Ultra-Violet Irradiation, as Influenced by Oyster Shell, in the Diet. Walter A. Hendricks, Alfred R. Lee, and Albert B. Godfrey 517–535
laying—
effect of cod-liver oil and ultra-violet irradiation in diet 517–533
feeding experiments 519–533
Heterospilus cephi—
geographical distribution and host 597
life history and habits 606–608, 609
morphology 599–606
Rohwer, a Parasite of the European Wheat Sawfly, *Cephus pygmaeus* (L.). C. C. Hill and H. D. Smith 597–609
seasonal history 608
Hexylresorcinol, germicidal efficiency with—
ethyl alcohol 611–612, 615, 616
glycerin 611–612, 614, 616
Hilaria mutica—
association, vegetative composition, palatability, and grazing capacity 1029–1030, 1045
value for forage in the Southwest 1027, 1030, 1034, 1040, 1041, 1042–1051

Page

HILL, C. C., and SMITH, H. D.: *Heterospilus cephi* Rohwer, a parasite of the European Wheat Sawfly, *Cephus pygmaeus* (L.) 597–609

HIRANO, E., and REED, H. S.: The Density of Stomata in Citrus Leaves 209–222

HOLBERT, JAMES R.; JOHANN, HELEN, and DICKSON, JAMES G.: Further Studies on Penicillium Injury to Corn 757–790

Honey—
concentration, relation to initiation of fermentation 125–126
fermentation, prevention, recommendations 130, 131
fermenting—
yeast isolation methods 123–124
Yeasts Found, Some Characteristics. G. E. Marvin, W. H. Peterson, E. B. Fred, and H. F. Wilson 121–131

Honeybee—
Distribution of Stimulative Efficiency in the Ultra-Violet Spectrum. Lloyd M. Bertholf 703–713
sensitivity to ultra-violet light, experiments 703–713

Hookworm, sheep, control by weekly doses of anthelmintics 1056, 1058, 1059, 1066

Horses—
nematodes in, removal by means of n-butylidene chloride, experiments 290–301
strongylidosis, treatment with n-butylidene chloride, experiments 290–301

HUMFELDT, HARRY, and SMITH, NATHAN R.: The Decomposition of Green Manures Grown on a Soil and Turned under Compared to the Decomposition of Green Manures Added to a Fallow Soil 715–731

Humidity—
and Temperature Conditions in Common Types of Insect Rearing Cages, Study. Roger C. Smith 547–557
control on growing plants, apparatus for. 1079–1081
effect on—
growth of *Penicillium oxalicum* 786–789, 790
rotting of Jerusalem artichokes in storage 337–344, 350–351
effects of suberization and wound-periderm formation in sweetpotato and gladiolus 353–364
Influence on Floral Infection of Wheat and Barley by Loose Smut. V. F. Tapke 503–516
measurement in insectaries, methods and devices 547, 548, 550–551, 553–554, 556–557
relative, May-July, 1918–1927 504

Humin—
nitrogen, of Alaska pea, chemical nature. 811–828
vegetable and soil, comparison 811–812

HUNTER, AMY, and SPOHN, ADELAIDE: The Antiscorbutic Vitamin in Home-Canned Carrots 1101–1108

Hybrid, "Constant," between *Aegilops orata* and *Triticum dicoccum*, Inheritance in. J. W. Taylor and C. E. Leighty 661–679

Hydrogen-ion concentration, effect on toxic action of sodium chlorate on Nitella 803–805

Hygrothermograph, use in insectaries for humidity determination 547, 556–557

Hymenoptera, parasitism by *Monodontomerus aereus* 454, 457–459

Hyperparasitism—
Eupteromalus nidulans 38
study of *Monodontomerus aereus* 445, 454–459

Hyphae, Strand, of the Cotton Root-Rot Fungus, Viability. David C. Neal and Lawrence G. McLean 490–502

Inbreeding—
oats, for resistance to *Ustilago levis*, study 1087–1094, 1098
progeny of *Aegilops orata* X *Triticum dicoccum* 661–679

Page

Infection—
Experiments with the Cotton Root-Rot Fungus, *Phymatotrichum omnivorum*. David C. Neal and George T. Ratliffe. 681–691
Floral, of Wheat and Barley by Loose Smut, Influence of Humidity. V. F. Tapke 503–516

Infestation, Bark-Beetle, of Pines, Two Blue-Staining Fungi Associated with. Caroline T. Rumbold 847–873

INGRAM, DOUGLAS C.: Vegetative Changes and Grazing Use on Douglas Fir Cut-Over Land 387–417

Inheritance—
in a "Constant" Hybrid Between *Aegilops orata* and *Triticum dicoccum*. J. W. Taylor and C. E. Leighty 661–679
of Type Floret Separation and Other Characters in Interspecific Crosses in Oats. Victor H. Florell 365–386
rust resistance in corn, study 420–430

Inoculation—
apple graft unions, with strains of *Bacterium tumefaciens*, study 985–1002
corn—
seed, with *Penicillium oxalicum*, results 760–773, 789
seedlings, with *Gibberella saubinetii*, method and results 570–594
cotton plants, with *Phymatotrichum omnivorum*, experiments 682–691
Jerusalem artichoke, with storage rot organisms 338–339, 345–350, 351
Juglans, with Phytophthora, experiments 895–902, 903
oat crosses, with *Ustilago levis* 1086–1087

Insect Rearing Cages, Common Types, Temperature and Humidity Conditions, Study. Roger C. Smith 547–557

Insectaries, temperature and humidity studies 548–557

Instrument for Determining the Breaking Strength of Straw, and a Preliminary Report on the Relation Between Breaking Strength and Lodging. S. C. Salmon 73–82

Invertase, presence in *Gibberella saubinetii*, tests 226, 229

Ips bark beetles, spread of blue-stain fungus 847–848, 849, 864–866, 870–872

Ironweed, yellow, host of tobacco ring spot, experiments 193, 205

Irrigation, frequency, effect on cotton fiber immaturity 742

Japanese Beetle, Parasite, Imported, *Dexia rentralis* Aldrich. R. W. Burrell 323–336

Jerusalem Artichoke, Storage Rots of. H. W. Johnson 337–352

Jimson weed, host of tobacco ring spot, experiments 193–194, 260

JODIDI, S. L.: The Nonprotein Nitrogen of the Alaska Pea, with Special Reference to the Chemical Nature of Humin Nitrogen 811–825

JOHANN, HELEN; HOLBERT, JAMES R., and DICKSON, JAMES G.: Further Studies on Penicillium Injury to Corn 757–790

JOHNSON, H. W.: Storage Rots of the Jerusalem Artichoke 337–352

Jornada Experimental Range—
climate, 1914–15 to 1929–30 1030–1031
plant succession and grazing capacity, studies 1027–1051

Juglans—
californica, inoculation with Phytophthora, experiments 895–899
Crown Rot, in California. Clayton O. Smith and James T. Barrett 885–903
hindsii, inoculation with Phytophthora 899–900, 903
regia, inoculation with Phytophthora 900–901, 903

KAHLENBERG, ORME J., and VORIS, LE ROY: The Percentage of Fat as a Basis for Estimating the Composition of Milk 749–755

Page

KRISS, MAX; FORBES, E. B.; BRAMAN, WINFRED W.; SWIFT, R. W.; MILLER, R. C.; FRENCH, R. B.; LETONOFF, T. V.; and SHARPLESS, G. R.—
The Fasting Metabolism of Cattle as a Base Value of Heat Production in the Determination of the Net Energy of Feeding Stuffs ... 1003–1014
The Metabolizable Energy and Net Energy Values of Corn Meal When Fed Exclusively and in Combination with Alfalfa Hay ... 1015–1026

Lambs, parasites, control by anthelmintic treatment of dams ... 1054, 1065–1066, 1068
Lamp, water-cooled, for growing plants, construction and use ... 1075–1077
Land, Douglas Fir Cut-Over, Vegetative Changes, and Grazing Use. Douglas C. Ingram ... 387–417
LANDAUER, WALTER: Influence of Thallium Salts upon the Molting Mechanism of Fowls ... 67–72
Lands, cut-over forest, vegetation, effect of repeated fires on ... 402–404
LARSINOS, G. J.; BEAUMONT, A. B.; PIEKENBROCK, P.; and NELSON, P. R.: The Assimilation of Nitrogen by Tobacco ... 559–566
Leaf Hoppers—
Genus Empoasca, Feeding Habits. Floyd F. Smith and F. W. Poos ... 267–285
See also Empoasca.
Leaf tissues, corn plant, marginal firing of, relation to potassium in sap ... 111–113
Leaves, Citrus, Stomata in, Density. H. S. Reed and E. Hirano ... 209–222
LEE, ALFRED R.; HENDRICKS, WALTER A.; and GODFREY, ALBERT B.: Effects of Cod-Liver Oil and Ultra-Violet Irradiation, as Influenced by Oyster Shell, in the Diet of Confined Laying Hens ... 517–535
LEIGHTY, C. E., and TAYLOR, J. W.: Inheritance in a "Constant" Hybrid between *Aegilops ovata* and *Triticum dicoccum* ... 661–679
Lemon, Eureka, leaf studies ... 210–219, 221–222
Lepidoptera, parasitism by *Monodontomerus aereus* ... 454–455, 457, 459
Leptographium lundbergii, association with—
Dendroctonus bark beetle ... 862
Ips bark beetle ... 870
LETONOFF, T. V.; FORBES, E. B.; BRAMAN, WINFRED W.; KRISS, MAX; SWIFT, R. W.; MILLER, R. C.; FRENCH, R. B.; and SHARPLESS, G. R.—
The Fasting Metabolism of Cattle as a Base Value of Heat Production in the Determination of the Net Energy of Feeding Stuffs ... 1003–1014
The Metabolizable Energy and Net Energy Values of Corn Meal When Fed Exclusively and in Combination with Alfalfa Hay ... 1015–1026
Lettuce, development under Vitaglass, experiments ... 151–152
LEWIS, WARREN H.; MILLER, FRED W.; SWETT, W. W.; and HARTMAN, CARL G.: A Study of Ova from the Fallopian Tubes of Dairy Cows, with a Genital History of the Cows ... 627–636
Light—
control on growing plants, apparatus for ... 1071–1079, 1082–1083
effects on toxicity of sodium chlorate to Nitella ... 799–800, 807–808
influence on density of stomata in citrus leaves ... 221
intensities, effect on honeybees ... 705–710, 712–713
ultra-violet, effect on honeybees, experiments and results ... 703–713
variations, effect on plant development, study ... 133–161
See also Photoperiodism; Sunlight.
Light cases, for growing plants, construction ... 1071–1079, 1082–1083

Page

Lignin, in Wheat Straw, Studies with Reference to Lodging. Max Phillips, Jehiel Davidson, and H. D. Weihe ... 619–626
Linseed Meal—
and Cottonseed Meal, Proteins of, Both Alone and in Combination with the Proteins of Corn, Nutritive Value for Growing Swine. H. H. Mitchell and T. S. Hamilton ... 743–748
protein, digestibility and biological value in diet of pigs ... 744–748
Lipase, presence in *Giberella saubinetii*, tests ... 227, 229
Lodging, Wheat Straw, Studies of Lignin with Reference to. Max Phillips, Jehiel Davidson, and H. D. Weihe ... 619–626
LUDWIG, C. A.: Some Factors Concerning Earliness in Cotton ... 637–659

MCLEAN, LAWRENCE G., and NEAL, DAVID C.: Viability of Strand Hyphae of the Cotton Root-Rot Fungus ... 499–502
MAINS, E. B.: Inheritance of Resistance to Rust, *Puccinia sorghi*, in Maize ... 419–430
Maize—
development under Vitaglass, experiments ... 141–144, 157
Inheritance of Resistance to Rust, *Puccinia sorghi*. E. B. Mains ... 419–430
Resistance to Rust, *Puccinia sorghi*, Inheritance. E. B. Mains ... 419–430
Mangels—
and Rutabagas, Changes in Chemical Composition during Storage. K. S. Morrow, R. B. Dustman, and H. O. Henderson ... 919–930
fiber and protein content, storage changes in, analyses and discussion ... 923–927, 928–930
moisture content, changes during storage ... 921, 927
nitrogen-free extract, storage changes ... 923
MARTIN, WM. H.; BROWN, B. E.; and SPRAGUE, H. B.: The Influence of Nitrogen, Phosphoric Acid, and Potash on the Number, Shape, and Weight of Potato Tubers ... 231–260
MARVIN, G. E.; PETERSON, W. H.; FRED, E. B.; and WILSON, H. F.: Some of the Characteristics of Yeasts Found in Fermenting Honey ... 121–131
Maturity, Cotton Fiber, Methods of Estimating. R. S. Hawkins ... 733–748
Mesophyli, injury by *Empoasca* spp ... 268–274, 275, 277, 283–284

Metabolism—
basal, of cattle, measurement ... 1004–1005
Fasting, of cattle—
as a Base Value of Heat Production in Determination of Net Energy of Feeding Stuffs. E. B. Forbes, Winfred W. Braman, Max Kriss, R. W. Swift, R. C. Miller, R. B. French, T. V. Letonoff, and G. R. Sharpless ... 1003–1014
measurement methods ... 1007–1008
Meteorus versicolor, parasite of brown-tail moth ... 39–40, 53
Methoxyl content of wheat plant, relation to lodging ... 620–623, 625
MEYER, W. H.: Thinning Experiments in Young Douglas Fir ... 537–546
Microorganisms, number in—
limed and unlimed soil, experiments ... 720–723, 730
soil, relation to nitrates and carbon dioxide ... 728–730
Milk—
composition of—
analyses, methods ... 749–751
Percentage of Fat as a Basis for Estimating. Orme J. Kahlenberg and Le Roy Voris ... 749–755
energy value, relation to fat content ... 751–752
Fat Percentage of as a Basis for Estimating Composition. Orme J. Kahlenberg and Le Roy Voris ... 749–755
protein in, relation to fat content ... 752–753
solids in, relation to fat content ... 753–754

Page

MILLER, FRED W.; SWETT, W. W.; HARTMAN, CARL G.; and LEWIS, WARREN H.: A Study of Ova from the Fallopian Tubes of Dairy Cows, with a Genital History of the Cows ... 627–636

MILLER, J. M.: High and Low Lethal Temperatures for the Western Pine Beetle ... 303–321

MILLER, R. C.; FORBES, E. B.; BRAMAN, WINFRED W.; KRISS, MAX; SWIFT, R. W.; FRENCH, R. B.; LETONOFF, T. V.; and SHARPLESS, G. R.—
The Fasting Metabolism of Cattle as a Base Value of Heat Production in the Determination of the Net Energy of Feeding Stuffs ... 1003–1014
The Metabolizable Energy and Net Energy Values of Corn Meal When Fed Exclusively and in Combination with Alfalfa Hay ... 1015–1026

MITCHELL, H. H.; and HAMILTON, T. S.: The Nutritive Value for Growing Swine of the Proteins of Linseed Meal and of Cottonseed Meal, Both Alone and in Combination with the Proteins of Corn ... 743–748

Moisture, soil—
conservation by straw mulch applied to potatoes ... 842, 844
control in growing plants, apparatus for ... 1082
effect on cotton fiber maturity ... 741–742

Mold, Gray, of Tobacco. Frederick A. Wolf ... 165–174

Moulting Mechanism of Fowls, Influence of Thallium Salts upon. Walter Landauer ... 67–72

Monoamino acids, in Alaska pea, nitrogen determination ... 817–818

Monodontomerus aereus—
distribution and description ... 446–447
host relations ... 454–457
importance ... 457–458
introduction into United States ... 445–446
life history and habits ... 447–454
Walker, Primary and Secondary Parasite of the Brown-Tail Moth and the Gipsy Moth. C. F. W. Muesebeck ... 445–460

MOORE, J. G., and TOTTINGHAM, W. E.: Some Phases of Plant Development under Vitaglass ... 133–163

MORROW, K. S.; DUSTMAN, R. B.; and HENDERSON, H. O.: Changes in the Chemical Composition of Mangels and Rutabagas during Storage ... 919–930

Mortality, Aegilops-emmer hybrids, experiments ... 676

Moth—
brown-tail. *See* Brown-tail moth.
satin. *See* Satin moth.

MUESEBECK, C. F. W.: *Monodontomerus aereus* Walker, Both a Primary and a Secondary Parasite of the Brown-Tail Moth and the Gipsy Moth ... 445–460

Mulch, Straw, Effects on Yield of Potatoes. John Bushnell and F. A. Welton ... 837–845

N-Butylidene Chloride—
a New Drug for the Treatment of Equine Strongylidosis. Willard H. Wright, H. B. Raffensperger, John Bozicevich, Paul C. Underwood, and Jacob M. Schaffer ... 287–302
effects on organs of horses, microscopical pathology ... 300–301

NEAL, DAVID C., and—
McLean, Lawrence G.: Viability of Strand Hyphae of the Cotton Root-Rot Fungus ... 499–502
Ratliffe, George T.: Infection Experiments with the Cotton Root-Rot Fungus *Phymatotrichum omnivorum* ... 681–691

NELLER, J. R.: Effect of Chlorates upon the Catalase Activity of the Roots of Bindweed ... 183–189

NELSON, P. R.; BEAUMONT, A. B.; LARSINOS, G. J.; and PIEKENBROCK, P.: The Assimilation of Nitrogen by Tobacco ... 559–566

Nematodes, in horses, removal by means of n-butylidene chloride ... 290–301

Page

Nematodirus spathiger in sheep, control by weekly doses of anthelmintics ... 1056, 1067

New Brunswick, N. J., climatological data, 1925–1928 ... 234–235

New Mexico, Southern, Clay Soils, Plant Succession and Grazing Capacity. R. S. Campbell ... 1027–1051

Nitella—
clavata—
sap, mineral constituents, determination ... 795–797
toxicity of sodium chlorate to, study ... 794–809
reactions to various chemicals ... 792–809
Toxic Action of Aqueous Sodium Chlorate on. H. R. Offord and R. P. d'Urbal ... 791–810

Nitrate—
application to cotton, date and rate variations ... 643–645
content of soil, factors affecting ... 717–720, 728–730, 731
nitrogen, content of corn sap, correlation with presence in soil, study ... 101–103, 117

Nitrates, soil, reduction by straw mulch applied to potatoes ... 837–838, 842, 844

Nitrogen—
accumulation in soils, studies ... 908–912, 914–915, 916–917
Assimilation by Tobacco. A. B. Beaumont, G. J. Larsinos, P. Piekenbrock, and P. R. Nelson ... 559–566
carriers, assimilability, experiments with tobacco ... 560–567
content of *Nitella clavata* sap, determination ... 796
deficiency, effect on color of corn plants ... 109–111
fixation, in solution and soil, comparisons ... 915–916, 917
humin—
of Alaska pea, chemical nature ... 811–823
vegetable and soil, comparison ... 811–812
influence on potato tubers ... 238–259
metabolism, experiments with growing pigs ... 745–747
Nonprotein, of Alaska Pea, with Special Reference to Chemical Nature of Humin Nitrogen. S. L. Jodidi ... 811–825
Nutrient Needs, Corn Plants, Indication by Expressed Sap. N. A. Pettinger ... 95–119
Nutrition, growing swine, experiments ... 743–748

Oat Crosses, Interspecific, Inheritance of Type of Floret Separation and Other Characters. Victor H. Florell ... 365–386

Oats—
breeding for resistance to *Ustilago levis*, study ... 1086–1098
Inheritance of Resistance to *Ustilago levis*. F. A. Coffman, T. R. Stanton, B. B. Bayles, G. A. Wiebe, R. W. Smith, and V. F. Tapke ... 1085–1099
morphological characters, relation to resistance to smut infection ... 1095–1097, 1098
resistance to *Ustilago levis*—
correlation in F_3 and F_4 ... 1092–1094, 1098
Inheritance of. F. A. Coffman, T. R. Stanton, B. B. Bayles, G. A. Wiebe, R. W. Smith, and V. F. Tapke ... 1085–1099
wild forms, descriptions ... 368–369

Oesophagostomum columbianum in sheep, control by weekly treatments of anthelmintics ... 1056, 1060, 1061, 1066

OFFORD, H. R., and D'URBAL, R. P.: Toxic Action of Aqueous Sodium Chlorate on Nitella ... 791–810

Oil emulsions, penetration into apple—
leaves, study ... 471–472, 474
twigs ... 473–474

Oils, petroleum. *See* Petroleum oils.

Oleoresin Production from Longleaf Pine Defoliated by Fire. Eloise Gerry ... 827–836

Onion, development under Vitaglass, experiments ... 149–150, 158

Orange leaves—
lamina growth, study ... 215–216
stomatal density, effect of fruiting and blossoming on ... 219–220

Page

Oranges, Valencia, leaf studies ... 209–222
Orchards, apple, infestation by Cytospora canker ... 431–434
Orthocresol, germicidal efficiency with—
glycerin ... 611–612, 614
sodium hydroxide ... 611–613
Orthophenylphenol, germicidal efficiency with—
ethyl alcohol ... 611–612, 616
glycerin ... 611–612, 614, 616
sodium hydroxide ... 611–612, 613–614
Ova—
cows, fertilized and unfertilized, description ... 632–635
Dairy Cows, from Fallopian Tubes, Study with a Genital History. Fred W. Miller, W. W. Swett, Carl G. Hartman, and Warren H. Lewis ... 627–636
Oxalic acid, production by *Penicillium oxalicum* ... 784–786, 789–790
Oxyurids, in horses, removal by means of n-butylidene chloride, experiments ... 290, 292, 293, 294, 300
Oyster shells, importance in diet of laying hens ... 517, 520–533

Paracresol, germicidal efficiency with ethyl alcohol ... 611–612, 615
Parasite, Imported, *Dexia ventralis* Aldrich, of the Japanese beetle. R. W. Burrell ... 323–336
Parasites—
Gastrointestinal, of Sheep, Control by Weekly Treatments with Various Anthelmintics. Willard H. Wright and John Bozicevich ... 1053–1069
nematode, equine, removal by n-butylidene chloride, experiments ... 290–301
Parasitism—
Apanteles lacteicolor, by *Euplectromalus nidulans* ... 38
Gibberella saubinetii on Corn Seedlings. Norma L. Pearson ... 569–596
Heterospilus cephi, on European wheat sawfly ... 597–599, 606, 608–609
primary and secondary, of *Monodontomerus aereus* ... 445, 454–459
Pathogenesis in Crown Gall of Woolly-Knot Type. E. A. Siegler and R. B. Piper ... 985–1002
Pea, Alaska, Nonprotein Nitrogen of, with Special Reference to Chemical Nature of Humin Nitrogen. S. L. Jodidi ... 811–825
Peach leaves, penetration by petroleum oils, study ... 470, 471, 474
Pearson, Norma L.: Parasitism of *Gibberella saubinetii* on Corn Seedlings ... 569–596
Peltier, George L.—
Control Equipment for the Study of Hardiness in Crop Plants ... 177–182
and Tysdal, H. M.: Hardiness Studies with 2-Year-Old Alfalfa Plants ... 931–955
Penicillium—
blight. *See* Penicillium injury.
Injury to Corn, Further Studies. Helen Johann, James R. Holbert, and James G. Dickson ... 757–790
oxalicum—
injury to corn seedlings, study ... 757–790
production of oxalic acid in corn seedlings ... 784–786, 789–790
sp., development on Jerusalem artichoke ... 342, 343, 345, 348, 349
Peterson, W. H.; Marvin, G. E.; Fred, E. B.; and Wilson, H. F.: Some of the Characteristics of Yeasts Found in Fermenting Honey ... 121–131
Petroleum Oils—
Penetration into Plant Tissue. Joseph M. Ginsburg ... 469–474
viscosity, effect on penetration into foliage ... 474
Pettinger, N. A.: The Expressed Sap of Corn Plants as an Indicator of Nutrient Needs ... 95–119
Petunia—
host of tobacco ring spot, inoculation experiments ... 194–195, 205
seed, transmission of tobacco ring spot, experiments ... 201–202, 206

Page

Phenol, germicidal efficiency with—
ethyl alcohol ... 611–612, 613
glycerin ... 611–612, 614
sodium hydroxide ... 611–613
Phenols, Mixture with Sodium Hydroxide, with Glycerin, and with Ethyl Alcohol, Germicidal Efficiency. F. W. Tilley and J. M. Schaffer ... 611–617
Phillips, Max; Davidson, Jehiel; and Weihe, H. D.: Studies of Lignin in Wheat Straw with Reference to Lodging ... 619–626
Phloem, injury by *Empoasca* sp. ... 274–283, 284
Phosphoric acid, effect on potato tubers ... 238–259
Photoperiodism, apparatus for study ... 1071–1084
Phymatotrichum omnivorum—
cause of cotton root rot ... 691
Cotton Root-rot Fungus, Infection Experiments. David C. Neal and George T. Ratliffe ... 681–691
See also Cotton root-rot fungus.
Phytomonas berberidis, N. Sp.—
Cause of a Bacterial Disease of Barberry. H. H. Thornberry and H. W. Anderson ... 29–36
morphology and characters ... 34–36
symptoms ... 30–32
technical description ... 36
See also Barberry leaf spot.
Phytophthora—
cactorum, cause of walnut crown rot ... 891–893, 902
inoculation on Juglans, experiments ... 895–902, 903
parasitica, infection of English walnut ... 885, 891
Piekenbrock, P.; Beaumont, A. B.; Larsinos, G. J.; and Nelson, P. R.: The Assimilation of Nitrogen by Tobacco ... 559–566
Pigs. *See* Swine.
Pine—
beetles. See *under specific pine.*
Longleaf—
Defoliated by Fire, Oleoresin Production. Eloise Gerry ... 827–836
growth after defoliation by fire ... 830, 832–833, 835–836
wood structure after scorching ... 831–832, 836
mountain, beetle, resistance to low temperatures ... 313
red—
height measurements, use in determining site index ... 2–6, 9–13, 17–19, 20–28
polymorphic site index curves, construction and characteristics ... 9–15
site, index curves, anamorphic and polymorphic, comparisons ... 3–9, 13–19
site index, determination ... 19–21, 22–27
site indices in Connecticut, distribution ... 21–22
Young, Plantations, Site Quality, the Use of Polymorphic Curves in Determining. Henry Bull ... 1–28
western, beetle—
effect of various temperatures on, experiments ... 303–321
eggs, effect of low temperatures on ... 314–315
High and Low Lethal Temperatures for. J. M. Miller ... 303–321
parasites and predators, effect of low temperatures on ... 317–318
yellow, infested bark, exposure to lethal temperatures ... 310–314, 315–316, 317–321
Pines, Infestation by Bark Beetle, Two Blue-Staining Fungi Associated with. Caroline T. Rumbold ... 847–873
Pinus resinosa. *See* Pine, red.
Piper, R. B., and Siegler, E. A.: Pathogenesis in the Woolly-Knot Type of Crown Gall ... 985–1002
Plant—
Development under Vitaglass, Some Phases. W. E. Tottingham and J. G. Moore ... 133–163
Succession and Grazing Capacity on Clay Soils in Southern New Mexico. R. S. Campbell ... 1027–1051
Tissue, Penetration by Petroleum Oils. Joseph M. Ginsburg ... 469–474
Plantations, Young Red Pine, Site Quality, Determination by Use of Polymorphic Curves. Henry Bull ... 1–28

Page

Plants—
Crop, Hardiness Study, Control Equipment for. George L. Peltier ... 177–182
Flowerless Condition, Duration in Response to Unfavorable Lengths of Day. W. W. Garner and H. A. Allard ... 439–443
Growing under Controlled Environmental Conditions, Apparatus for. Robert A. Steinberg ... 1071–1084
Polymorphic Curves, Use in Determining Site Quality in Young Red Pine Plantations. Henry Bull ... 1–28
Polypeptides—
in Alaska pea, hydrolysis, formation of humin nitrogen ... 816–817
nitrogen content in Alaska pea, determination ... 817
nutritive value, discussion ... 821–822
Poos, F. W., and Smith, Floyd F.: The Feeding Habits of Some Leaf Hoppers of the Genus Empoasca ... 267–285
Pope, O. A.: The Determination of Sample Size for Diameter Measurements in Cotton Fiber Studies ... 957–984
Potash, muriate, effect on nonprotein nitrogen content of pea ... 814–823
Potassium—
content of corn sap, correlation with presence in soil ... 104
deficiency, effect on tissues of corn plant ... 111–116, 118
on potato tubers ... 238–259
fertilization—
effect on color of corn sap ... 101, 117
effects on cornstalks ... 114–116, 118
Potato—
inoculations with tobacco ring-spot, results ... 202–205, 206
tubers—
effect of fertilizer on ... 231–260
Number, Shape, and Weight, Influence of Nitrogen, Phosphoric Acid, and Potash on. Wm. H. Martin, B. E. Brown, and H. B. Sprague ... 231–260
Potatoes—
development—
effect of season and fertilizers ... 233–244, 255–259
under Vitaglass, experiments ... 147, 158, 159
knobby, prevention by use of straw mulch ... 840–841
yield—
effect of different fertilizers ... 244–259
Effects of Straw Mulch. John Bushnell and F. A. Welton ... 837–845
Poteriostomum spp., in horses, removal by means of n-butylidene chloride ... 290–297, 299, 301
Poultry. *See* Hens.
Primrose—
Chinese, growth under Vitaglass, experiments ... 152
fairy, development under Vitaglass, experiments ... 152–153
Proper, A. B.: *Eupteromalus nidulans*, a Parasite of the Brown-Tail and Satin Moths ... 37–56
Proteases, presence in *Gibberella saubinetii*, tests ... 227–228, 229
Protein, cottonseed meal, digestibility and biological value in diet of pigs ... 744–748
Proteins—
Linseed Meal and Cottonseed Meal, Both Alone and in Combination with the Proteins of Corn, Nutritive Value for Growing Swine. H. H. Mitchell and T. S. Hamilton ... 743–748
nutritive value for growing pigs, experiments ... 743–748
Pseudomonas fluorescens, development on Jerusalem artichoke. 342–343, 344, 345, 346–348, 351
Pseudotsuga taxifolia. *See* Fir, Douglas.
Puccinia sorghi—
physiologic forms ... 419–420
Rust, Resistance Inheritance in Maize. E. B. Mains ... 419–430
Pullets, molting mechanism, effect of thallium salts ... 68–72

Page

Pulley, H. C., and Greaves, J. E.: The Soil Versus the Solution Method as a Means of Studying Bacterial Activities in Soil ... 905–917
Pythiacystis citrophthora—
cause of walnut crown rot ... 891–893
control measures ... 902–903

Radish, development under Vitaglass, experiments ... 148–149, 158
Raffensperger, H. B.; Wright, Willard H.; Bozicevich, John; Underwood, Paul C.; and Schaffer, Jacob M.: N-Butylidene Chloride, a New Drug for the Treatment of Equine Strongylidosis ... 287–302
Rations—
corn meal and alfalfa hay, digestion experiments ... 1015–1021
growing pigs, experiments ... 743–748
Ratliffe, George T., and Neal, David C.: Infection Experiments with the Cotton Root-Rot Fungus *Phymatotrichum omnivorum* ... 681–691
Rearing Cages, Insect, Common Types of, a Study of Temperature and Humidity Conditions in. Roger C. Smith ... 547–557
Red pine. *See* Pine, red.
Reed, H. S., and Hirano, E.: The Density of Stomata in Citrus Leaves ... 209–222
Reeves, E. L., and Fisher, D. F.: A Cytospora Canker of Apple Trees ... 431–438
Refrigeration of crop plants, for hardiness, study ... 177–182
Rhizobium—
leguminosarium, numbers in soil, determination ... 261–266
trifolii, numbers in soil, determination ... 261–266
Two Species, Relative Numbers in Soils. J. K. Wilson ... 261–266
Rhizopus spp., development on Jerusalem artichoke ... 341–342, 344, 345, 348, 349, 351
Ring Spot, Tobacco—
in Virginia, Studies. R. G. Henderson and S. A. Wingard ... 191–207
See also Tobacco ring-spot.
Rockwood, L. P., and Zimmerman, Sarah K.: A Seed Caterpillar, *Grapholitha conversana* Wlsm., on a Native Clover in the North Pacific Region ... 57–65
Rodenhiser, H. A.: Stunting of Wheat Caused by *Tilletia levis* and *T. tritici* ... 465–468
Root—
anchorage, corn plants, effect of potassium fertilization on ... 116, 118
Cotton Plant, Development as Related to Character of Growth and Fruitfulness. Frank M. Eaton ... 875–883
crops, composition, changes during storage, experiments ... 919–930
Root-Rot Fungus, Cotton—
Phymatotrichum omnivorum, Infection Experiments. David C. Neal and George T. Ratliffe ... 681–691
Strand Hyphae of, Viability. David C. Neal and Lawrence G. McLean ... 499–502
Roots, Bindweed, Catalase Activity, Effect of Chlorates upon. J. R. Neller ... 183–189
Rots, Storage, of the Jerusalem Artichoke. H. W. Johnson ... 337–352
Rubber Weed, Bitter (*Actinea odorata*), Poisonous Effects on Sheep, Preliminary Report. A. B. Clawson ... 693–701
Rumbold, Caroline T.: Two Blue-Staining Fungi Associated with Bark-Beetle Infestation of Pines ... 847–873
Rust, *Puccinia sorghi*, Resistance Inheritance in Maize. E. B. Mains ... 419–430
Rutabagas—
and Mangels, Changes in Chemical Composition during Storage. K. S. Morrow, R. B. Dustman, and H. O. Henderson ... 919–930
fiber and protein content, storage changes in, analyses and discussion ... 923–927, 928–930
moisture content, changes during storage ... 921, 927
nitrogen-free extract, storage changes ... 923

Page

Rye, green, decomposition, microbiological effects ... 715-731

SALMON, S. C.: An Instrument for Determining the Breaking Strength of Straw, and a Preliminary Report on the Relation between Breaking Strength and Lodging ... 73-82

Salts, Thallium, Influence upon the Molting Mechanism of Fowls. Walter Landauer ... 67-72

Sap, Expressed, of Corn Plants, as an Indicator of Nutrient Needs. N. A. Pettinger ... 95-119

Satin Moth—
and Brown-Tail Moth, *Eupteromalus nidulans*, a Parasite of. A. B. Proper ... 37-56
parasitism, experiments ... 39-46, 50-52, 53-54, 55-56

Sawfly, wheat. *See* Wheat sawfly.

Scab fungus. See *Gibberella saubinetii*.

SCHAFFER, J. M., and TILLEY, F. W.: Germicidal Efficiency of Mixtures of Phenols with Sodium Hydroxide, with Glycerin, and with Ethyl Alcohol ... 611-617

SCHAFFER, JACOB M.; WRIGHT, WILLARD H.; RAFFENSPERGER, H. B.; BOZICEVICH, JOHN; and UNDERWOOD, PAUL C.: N-Butylidene Chloride, a New Drug for the Treatment of Equine Strongylidosis ... 287-302

Scleropogon brevifolius, value for forage in Southwest ... 1036, 1037-1043, 1045-1051

Sclerotinia sclerotiorum, development on Jerusalem artichoke ... 345, 348-349, 351

Sclerotium rolfsii, development on Jerusalem artichoke ... 345, 348, 349, 351

Scurvy, vitamin preventing—
absence in home-canned carrots ... 1101, 1108
absence in home-canned tomatoes ... 1109-1113

Season, effect on potato tuber development ... 233-237, 258

Sedum spp., flowerless condition, day-length experiments ... 439-443

Senna, wild, flowerless condition, day-length experiments ... 442, 443

SHARPLESS, G. R.; FORBES, E. B.; BRAMAN, WINFRED W.; KRISS, MAX; SWIFT, R. W.; MILLER, R. C.; FRENCH, R. B.; and LETONOFF, T. V.—
The Fasting Metabolism of Cattle as a Base Value of Heat Production in the Determination of the Net Energy of Feeding Stuffs ... 1003-1014
The Metabolizable Energy and Net Energy Values of Corn Meal when Fed Exclusively and in Combination with Alfalfa Hay ... 1015-1026

Sheep—
feeding with *Actinea odorata*, experiments ... 696-701
grazing on cut-over Douglas fir land, effects ... 407-417
livers, copper content, result of dosing sheep with copper sulphate ... 1064-1065, 1067
Parasites, Gastrointestinal, Control by Weekly Treatments with Various Anthelmintics. Willard H. Wright and John Bozicevich ... 1053-1069
poisoning by *Actinea odorata*, effects ... 693-701
Poisonous Effects of Bitter Rubber Weed (*Actinea odorata*) on, Preliminary Report. A. B. Clawson ... 693-701

SIEGLER, E. A.; and PIPER, R. B.: Pathogenesis in the Wooly-Knot Type of Crown Gall ... 985-1002

Silica content of wheat plant, effect on lodging, study ... 619-625

Slash fire, Douglas fir region, vegetation following ... 396-406

SMITH, CLAYTON O., and BARRETT, JAMES T.: Crown Rot of Juglans in California ... 885-903

SMITH, FLOYD F., and POOS, F. W.: The Feeding Habits of Some Leaf Hoppers of the Genus Empoasca ... 267-285

SMITH, H. D., and HILL, C. C.: *Heterospilus cephi* Rohwer, a Parasite of the European Wheat Sawfly, *Cephus pygmaeus* (L.) ... 597-609

Page

SMITH, NATHAN R., and HUMFELDT, HARRY: The Decomposition of Green Manures Grown on a Soil and Turned under Compared to the Decomposition of Green Manures Added to a Fallow Soil ... 715-731

SMITH, ORA: Characteristics Associated with Abortion and Intersexual Flowers in the Eggplant ... 83-94

SMITH, R. W.; COFFMAN, F. A.; STANTON, T. R.; BAYLES, B. B.; WIEBE, G. A.; and TAPKE, V. F.: Inheritance of Resistance in Oats to *Ustilago levis* ... 1085-1099

SMITH, ROGER C.: A Study of Temperature and Humidity Conditions in Common Types of Insect Rearing Cages ... 547-557

Smut—
covered, of oats, resistance inheritance, study ... 1085-1098
loose—
fungi causing, life history ... 506
of Wheat and Barley, Influence of Humidity on Floral Infection. V. F. Tapke ... 503-516

Soaps, influence upon germicidal efficiency of phenol mixtures ... 614, 616

Sodium—
Chlorate—
Aqueous, Toxic Action on Nitella. H. R. Offord and R. P. d'Urbal ... 791-810
content of *Nitella clavata* sap, determination ... 795-796
penetration into cytoplast of Nitella ... 797-798, 807
spray, effect on plants ... 791-792
sprays, effect on roots of bindweed ... 185-189
toxicity to Nitella, comparison with sodium nitrate ... 806-807, 808
toxicity to Nitella, influence of hydrogen-ion concentration ... 803-805, 808
toxicity to Nitella under various light conditions ... 799-800, 807-808
hydroxide, influence upon germicidal efficiency of phenols ... 611-614, 616-617
nitrate—
application to cotton, date and rate variations ... 643-645
effect on lodging of wheat, study ... 619-625
toxic action on Nitella ... 806-807

Soil—
acidity, effect of green-manuring experiments ... 724-725
alkali, effect on cotton fiber maturity ... 737-738, 742
Bacterial Activities, Study by Means of the Soil Versus the Solution Method. H. C. Pulley and J. E. Greaves ... 905-917
deficiencies, relation to color of corn sap ... 100-101, 117, 118
Fallow, Green Manures Added to, Decomposition, Comparison with Decomposition of Green Manures Grown on a Soil and Turned Under. Nathan R. Smith and Harry Humfeldt ... 715-731
fertility, relation to quantity of corn sap ... 98-100
moisture—
control in growing plants, apparatus for ... 1082
effect on cotton fiber maturity ... 741-742
nitrate content, factors affecting ... 717-720, 728-730, 731

Soils—
adobe, plant succession on, southern New Mexico ... 1034-1046, 1050
ammonification studies, experiments ... 907-908, 913-914, 916
analysis for study of bacterial activity ... 905-907
clay—
loam, plant succession on, southern New Mexico ... 1046-1048, 1050-1051
Plant Succession and Grazing Capacity in Southern New Mexico. R. S. Campbell ... 1027-1051
plant succession on different types ... 1033-1049, 1050-1051
vegetative growth and change, factors influencing ... 1030-1033, 1050-1051
diagnosis by nutrient concentrations, standards ... 117-118

Page

Soils—Continued.
on red pine plantations, studies 2–28
Two Species of Rhizobium in, Relative Numbers. J. K. Wilson 261–266
Solar heat, effect on western pine beetle in yellow pine bark 305–309, 319–320
Solidago, mesophyll of, injury by *Empoasca* spp. 268–271
Southwest, plant succession and grazing capacity, studies 1029–1030
Soybean, development under Vitaglass, experiments 150–151, 158
Spectrum—
solar, effect on plants, apparatus for study 1078
Ultra-Violet, Stimulative Efficiency, Distribution for the Honeybee. Lloyd M. Berthoff 703–713
SPITZER, GEORGE, and DIEHM, MAURICE M.: Preliminary Studies of the Enzymes of *Gibberella saubinetii* 223–229
SPOHN, ADELAIDE—
and HUNTER, AMY: The Antiscorbutic Vitamin in Home-Canned Carrots 1101–1108
The Antiscorbutic Vitamin in the Juice of Home-Canned Tomatoes 1109–1113
SPRAGUE, H. B.; MARTIN, WM. H.; and BROWN, B. E.: The Influence of Nitrogen, Phosphoric Acid, and Potash on the Number, Shape, and Weight of Potato Tubers 231–260
Spray, sodium-chlorate, effect on plants 791–792
Sprays—
oil, injury to foliage and probable causes 469–470
sodium-chlorate, effects on roots of bindweed 185–189
Squash, host of tobacco ring spot, experiments 194, 205
STANTON, T. R.; COFFMAN, F. A.; BAYLES, B. B.; WIEBE, G. A.; SMITH, R. W.; and TAPKE, V. F.: Inheritance of Resistance in Oats to *Ustilago levis* 1085–1099
Staphylococcus aureus, resistance to phenol mixtures, tests 611–617
STARRETT, RUTH COLVIN, and ARTSCHWAGER, ERNST: Suberization and Wound-Periderm Formation in Sweetpotato and Gladiolus as Affected by Temperature and Relative Humidity 353–364
Steers—
alimentary tract, contents after fast 1013–1014
fasting, heat production, evaluation experiments 1006–1014, 1022–1024
surface area after fast, measurement 1014
STEINBERG, ROBERT A.: An Apparatus for Growing Plants under Controlled Environmental Conditions 1071–1084
Stilpnotia salicis. *See* Satin moth.
Stomata in Citrus Leaves, Density. H. S. Reed and E. Hirano 209–222
Storage—
Jerusalem artichokes, effect on development of rots 337–351
Mangels and Rutabagas, Changes in Chemical Composition. K. S. Morrow, R. B. Dustman, and H. O. Henderson 919–930
Rots of the Jerusalem Artichoke. H. W. Johnson 337–352
Straw—
Breaking Strength, Instrument for Determining, and a Preliminary Report on the Relation between Breaking Strength and Lodging. S. C. Salmon 73–82
Mulch, Effects on Yield of Potatoes. John Bushnell and F. A. Welton 837–845
Wheat, Lignin in, Studies with Reference to Lodging. Max Phillips, Jehiel Davidson, and H. D. Weihe 619–626
Strongylidosis, Equine, Treatment by N-Butylidene Chloride, a New Drug. Willard H. Wright, H. B. Raffensperger, John Bozicevich, Paul C. Underwood, and Jacob M. Schaffer 287–302
Strongyloides papillosus in sheep, control by weekly treatments of anthelmintics 1056, 1065–1066
Strongylus spp., removal from horses by means of n-butylidene chloride 287–301
Stunting of Wheat, *Tilletia levis* and *T. tritici* as Causes. H. A. Rodenhiser 465–468

Page

Suberization and Wound-Periderm Formation in Sweetpotato and Gladiolus as Affected by Temperature and Relative Humidity. Ernst Artschwager and Ruth Colvin Starrett 353–364
Sun scorch, effect on western pine beetle in yellow pine bark 305–309, 319–320
Sunlight—
ultra-violet elimination from, by common glass, experiments 134–161
See also Daylight; Light; Solar heat.
Sweetclover—
and Alfalfa, Stand and Yield, Correlation between: C. J. Willard 461–464
host of tobacco ring spot, experiments 192–193, 205
yield and stand, correlation 461, 463–464
Sweetpotato—
and Gladiolus, Suberization and Wound-Periderm Formation as Affected by Temperature and Relative Humidity. Ernst Artschwager and Ruth Colvin Starrett 353–364
root, structure 354–355
tuber—
suberization development, study 353–355, 364
wound-cork development, study 353–360, 364
SWETT, W. W.; MILLER, FRED W.; HARTMAN, CARL G.; and LEWIS, WARREN H.: A Study of Ova from the Fallopian Tubes of Dairy Cows, with a Genital History of the Cows 627–636
SWIFT, R. W.; FORBES, E. B.; BRAMAN, WINFRED W.; KRISS, MAX; MILLER, R. C.; FRENCH, R. B.; LETONOFF, T. V.; and SHARPLESS, G. R —
The Fasting Metabolism of Cattle as a Base Value of Heat Production in the Determination of the Net Energy of Feeding Stuffs 1003–1014
The Metabolizable Energy and Net Energy Values of Corn Meal When Fed Exclusively and in Combination with Alfalfa Hay 1015–1026
Swine, Growing, Nutritive Value of Proteins of Linseed Meal and Cottonseed Meal, Both Alone and in Combination with the Proteins of Corn. H. H. Mitchell and T. S. Hamilton 743–748

Tachinidae, parasitism by *Monodontomerus aereus* 454–459
TAPKE, V. F.—
COFFMAN, F. A.; Stanton, T. R.; Bayles, B. B.; Wiebe, G. A.; and Smith, R. W.: Inheritance of Resistance in Oats to *Ustilago levis* 1085–1099
Influence of Humidity on Floral Infection of Wheat and Barley by Loose Smut 503–516
TAYLOR, J. W., and LEIGHTY, C. E.: Inheritance in a "Constant" Hybrid Between *Aegilops ovata* and *Triticum dicoccum* 661–679
Temperature—
and Humidity Conditions in Common Types of Insect Rearing Cages, Study. Roger C. Smith 547–557
control on growing plants, apparatus for 1079–1081
effects on—
development of rots of Jerusalem artichoke 337–351
growth of *Penicillium azalicum* 759, 786–789, 790
suberization and wound-periderm formations in sweetpotato and gladiolus 353–364
measurement in insectaries, methods and results 548, 551–554, 556–557
soil, reduction by straw mulch applied to potatoes 837, 841–842, 844
Temperatures—
air, effects on larvae of western pine beetle removed from bark 309–310, 316–317, 319–321
bark and air, comparison 319
Lethal, High and Low, for the Western Pine Beetle. J. M. Miller 303–321
low, effect on western pine beetle 311–315, 316–317, 318–321
pine bark, study, methods and equipment 304–309, 310

Tetrachlorethylene— Page
efficacy in removal of parasites from sheep, experiments 1053–1068
toxicity to sheep, study 1062–1064
Thallium Salts, Influence upon the Molting Mechanism of Fowls. Walter Landauer 67–72
THORNBERRY, H. H., and ANDERSON, H. W.: A Bacterial Disease of Barberry Caused by *Phytomonas berberidis*, N. Sp. 29–36
Thymol, germicidal efficiency with—
ethyl alcohol 611–612, 615
sodium hydroxide 611–612, 613, 617
Tilletia levis and *T. tritici*, Causes of Stunting of Wheat. H. A. Rodenhiser 465–468
TILLEY, F. W., and SCHAFFER, J. M.: Germicidal Efficiency of Mixtures of Phenols with Sodium Hydroxide, with Glycerin, and with Ethyl Alcohol 611–617
Tobacco—
Assimilation of Nitrogen by. A. B. Beaumont, G. J. Larsinos, P. Piekenbrock, and P. R. Nelson 559–566
Gray Mold. Frederick A. Wolf 165–174
growth in cultures containing nitrogen carriers, experiments 560–567
leaves, age, effect upon susceptibility to ring-spot infections 200–201, 206
nitrogen assimilation experiments 559–567
nutrition experiments 559–567
ring spot—
cross-inoculation experiments and results 202–203
occurence on various hosts, experiments 192–195, 205–206
symptoms, development 199–200
virus, properties and reactions 195–199, 205–206
seeds, transmission of ring spot, experiments 201
Tobosa grass. See *Hilaria mutica*.
Tomato—
development under Vitaglass, experiments 144–147, 157–158
infection with tobacco ring spot by grafting 201
juice—
home canning, effect on Vitamin C content 1110–1113
raw, value in protecting guinea pigs from scurvy 1110–1112
leaves, penetration by petroleum oils, study 470, 471, 474
Tomatoes, Home-Canned, Juice, Antiscorbutic Vitamin in. Adelaide Spohn 1109–1113
TOTTINGHAM, W. E., and MOORE, J. G.: Some Phases of Plant Development under Vitaglass 133–163
Trachelus labidus, host of *Heterospilus cephi*, experiment 597
Transpiration rate, corn, effect on Penicillium injury 786–789, 790
Trees—
Apple—
Cytospora canker. D. F. Fisher and E. L. Reeves 431–438
disinfection for Cytospora canker, experiments 436
diameter growth, relation to thinning 542–546
foliage scorching, effects on vitality and growth 830–833
thinning experiments 537–546
Trichostrongyles, in sheep, control by weekly treatments of anthelmintics, study 1053–1068
Tridontophorus spp., in horses, removal by means of n-butylidene chloride 290, 291, 294, 295, 299
Triticum dicoccum and *Aegilops ovata*, a "Constant" Hybrid Between, Inheritance. J. W. Taylor and C. E. Leighty 661–679
Tubers, Potato, Number, Shape, and Weight, Influence of Nitrogen, Phosphoric Acid, and Potash on. Wm. H. Martin, B. E. Brown, and H. B. Sprague 231–260
TYSDAL, H. M., and PELTIER, GEORGE L.: Hardiness Studies with 2-Year-Old Alfalfa Plants 931–955
Ultra-Violet— Page
Irradiation—
and Cod-Liver Oil, as Influenced by Oyster Shell, in the Diet of Confined Laying Hens, Effects. Walter A. Hendricks, Alfred R. Lee, and Albert B. Godfrey 517–535
of hens, value, comparison with cod-liver oil 517–533
radiation, elimination by common glass, experiments 134–161
Spectrum, Stimulative Efficiency, Distribution for the Honeybee. Lloyd M. Berthold 703–713
UNDERWOOD, PAUL C.; WRIGHT, WILLARD H.; RAFFENSPERGER, H. B.; BOZICEVICH, JOHN; and SCHAFFER, JACOB M.: N-Butylidene Chloride, a New Drug for the Treatment of Equine Strongylidosis 287–302
Ustilago—
levis, Resistance Inheritance in Oats. F. A. Coffman, T. R. Stanton, B. B. Bayles, G. A. Wiebe, R. W. Smith, and V. F. Tapke 1085–1099
tritici. See Smut, loose.

Vegetation, forest, Douglas fir region, relation to repeated fires 402–404
Vetch, green, decomposition, microbiological effects 716–731
Vitaglass, effects upon plant development, study 133–161
Vitamin, Antiscorbutic—
in Home-Canned Carrots. Adelaide Spohn and Amy Hunter 1101–1108
in Juice of Home-Canned Tomatoes. Adelaide Spohn 1109–1113
Vitamin C, content of—
home-canned carrots, study 1101–1108
home-canned tomatoes, study 1109–1113
VORIS, LE ROY, and KAHLENBERG, ORME J.: The Percentage of Fat as a Basis for Estimating the Composition of Milk 749–755

Walnut—
bark, exudate, toxicity, experiments 893–894
crown rot, causal organism, isolation 891–893, 902
trees, infection with crown rot, studies 886–903
Weather, influence on gray mold of tobacco 171–173, 174
Weeds, eradication by chlorates, study 183–189
WEIHE, H. D.; PHILLIPS, MAX; and DAVIDSON, JEHIEL: Studies of Lignin in Wheat Straw with Reference to Lodging 619–626
WELTON, F. A., and BUSHNELL, JOHN: Some Effects of Straw Mulch on Yield of Potatoes 837–845
Western pine beetle. See Pine, western, beetle.
Wheat—
and Barley, Floral Infection by Loose Smut, Influence of Humidity. V. F. Tapke 503–516
back crosses—
a Study of Certain Characters in. Victor H. Florell 475–498
characters, description 478–479, 481–485, 489–498
breeding, back crossing in, experiments 476–498
characters, inheritance study 476–498
development under Vitaglass, experiments 137–141, 157
dwarfing, effects of breeding 488–490, 495–496, 497
earliness, inheritance studies 491–493, 496–497, 498
glume color, effects of breeding 490, 498
hybrids, inheritance studies 661–679
inoculation with *Tilletia* sp., experiments 466–468
plants, chemical composition 619–625
resistance to loose smut, relation to humidity, experiments 507–515
Sawfly, European, *Cephus pygmaeus* (L.), *Heterospilus cephi* Rohwer a parasite of. C. C. Hill and H. D. Smith 597–609
spike density, effects of breeding 480–488, 494–495, 497
Straw, Lignin in, Studies with Reference to Lodging. Max Phillips, Jehiel Davidson, and H. D. Weihe 619–626

Page

Wheat—Continued.
Stunting Caused by *Tilletia levis* and *T. tritici*. H. A. Rodenhiser 465–468
varieties, description 476–477
winter, lodging, relation to breaking strength 80–82
WIEBE, G. A.; COFFMAN, F. A.; STANTON, T. R.; BAYLES, B. B.; SMITH, R. W.; and TAPKE, V. F.: Inheritance of Resistance in Oats to *Ustilago levis* 1085–1099
WILLARD, C. J.: The Correlation between Stand and Yield of Alfalfa and Sweetclover 461–464
WILSON, H. F.; MARVIN, G. E.; PETERSON, W. H.; and FRED, E. B.: Some of the Characteristics of Yeasts Found in Fermenting Honey 121–131
WILSON, J. K.: Relative Numbers of Two Species of Rhizobium in Soils 261–266
WINGARD, S. A., and HENDERSON, R. G.: Further Studies on Tobacco Ring Spot in Virginia 191–207
Winter injury, alfalfa, types 945–949
WOLF, FREDERICK A.: Gray Mold of Tobacco 165–174
Worms, gastrointestinal, control by weekly doses of anthelmintics 1053–1068
Wound-Periderm Formation and Suberization in Sweetpotato and Gladiolus as Affected by Temperature and Relative Humidity. Ernst Artschwager and Ruth Colvin Starrett 353–364

Page

WRIGHT, WILLARD H.—
and BOZICEVICH, JOHN: Control of Gastrointestinal Parasites of Sheep by Weekly Treatments with Various Anthelmintics 1053–1069
RAFFENSPERGER, H. B.; BOZICEVICH, JOHN; UNDERWOOD, PAUL C.; and SCHAFFER, JACOB M.: N-Butylidene Chloride, a New Drug for the Treatment of Equine Strongylidosis 287–302

Yeasts—
honey—
fermentation characteristics and products 126–128
morphology and description 128–130
in Fermenting Honey, Some Characteristics Found. G. E. Marvin, W. H. Peterson, E. B. Fred, and H. F. Wilson 121–131
isolation from honey 122–124

ZIMMERMAN, SARAH K., and ROCKWOOD, L. P.: A Seed Caterpillar, *Grapholitha conversana* Wlsm., on a Native Clover in the North Pacific Region 57–65
Zygosaccharomyces—
spp., isolation from fermented honey 122–124
spp., morphology and description 128–130
two new species of, growth in honey, and descriptions 129–130